

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of : **Confirmation No. 3936**
Nobuyuki MASUMURA et al. : Attorney Docket No. 2004_1509A
Serial No. 10/508,788 : Group Art Unit 3682
Filed September 23, 2004 : Examiner James Pilkington
TAPE-SHAPED MOLDING AND BELT : **Mail Stop Appeal Brief - Patents**
FOR BALL CHAIN

APPELLANTS' BRIEF UNDER 37 CFR § 41.37

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following is Appellants' Brief, submitted under the provisions of 37 CFR § 41.37.
Pursuant to the provisions of 37 CFR § 41.20(B)(2), this Brief is submitted with a fee of
\$540.00.

REAL PARTY IN INTEREST

The real parties in interest are (1) Kureha Gosen Co., Ltd. of Tochigi, Japan, and (2) THK Co., Ltd. of Tokyo, Japan, the assignees of the present invention.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

STATUS OF CLAIMS

Claims 1-16, 27-33, and 45 have been canceled.

Claims 17-26, 34-44, and 46-51 stand finally rejected.

The Appellants now appeal the rejection of claims 17-26, 34-44, and 46-51.

STATUS OF AMENDMENTS

No amendments subsequent to the amendment under 37 CFR § 1.116 filed February 13, 2009 have been made. The amendment filed February 13, 2009 was indicated as entered in the Advisory Action mailed February 25, 2009.

SUMMARY OF CLAIMED SUBJECT MATTER

The summary of claimed subject matter will be made with reference to the specification as amended by the substitute specification filed with the response of February 5, 2007.

The subject matter of independent claim 17 is a belt (see Figures 2A-2C) comprising a tape-shaped product including a tape of synthetic resin (2) having longitudinal edges, and extending along each of the longitudinal edges and integral with the tape, a stretched fibrous member (1) of thermoplastic resin including oriented molecular chains of the thermoplastic resin oriented longitudinally along the stretched fibrous member (see page 5, lines 6-21; page 6, line 9 to page 7, line 7; page 10, line 13 to page 11, line 2; Figures 2A-2C), the stretched fibrous member obtained by stretching a yet-unstretched fibrous member to provide the stretched fibrous member with a tensile strength greater than a tensile strength of the yet-unstretched fibrous member (see page 12, line 1 to page 13, line 7), wherein the thermoplastic resin and the synthetic resin comprise substantially identical resins (see page 13, line 8 to page 14, line 4), and wherein each the stretched fibrous member is positioned inwardly of a corresponding the each of the longitudinal edges (see page 10, lines 17-19; Figures 2A-2C).

The subject matter of dependent claim 34 is the belt according to claim 17 (described above), wherein the thermoplastic resin and the synthetic resin comprise identical resins or include identical resins as principal components (see page 13, line 8 to page 14, line 4).

The subject matter of dependent claim 51 is the belt according to claim 34 (described above), wherein each said stretched fibrous member and said tape are made of an identical resin (see page 13, line 8 to page 14, line 4).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

(1) Whether claims 17-26, 34-44, and 46-51 are unpatentable under 35 USC § 112, second paragraph, as being indefinite.

(2) Whether claims 17-26, 34-43, and 49-51 are unpatentable under 35 USC § 103(a) over EP 1083347 to Matsumoto et al. in view of *The Science and Engineering of Materials* by

Askeland and US 4,536,536 to Kavesh et al.

(3) Whether claims 44 and 48 are unpatentable under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of US 5,852,135 to Kanai et al.

(4) Whether claim 46 is unpatentable under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of US 6,103,805 to Kojima et al.

(5) Whether claim 47 is unpatentable under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of US 6,610,766 to Kitamura et al.

ARGUMENT

I. Rejection under 35 USC § 112, second paragraph.

Claims 17-26

Claim 17 was amended in the response under 37 CFR § 1.116 filed February 13, 2009 specifically to address this rejection. Specifically, the limitation *substantially* has been deleted from the claim. Accordingly, Applicants submit that this rejection is now inapplicable to claims 17-26.

Claims 34-44 and 46-51

Claim 17, from which claims 34-44 and 46-51 depend, recites “(i) a tape of synthetic resin....” This element provides a proper antecedent basis for the recitation of “said tape” in claims 34-44 and 46-51. Accordingly, Applicants respectfully traverse this rejection.

II. Rejection under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh.

Claims 17-26, 34-43, and 49-51

Claim 17 recites a belt comprising a tape-shaped product including a tape of synthetic

resin and a stretched fibrous member of thermoplastic resin extending along each longitudinal edge of the tape, wherein the thermoplastic resin and the synthetic resin comprise substantially identical resins. For the reasons given below, this is not obvious in view of the combined disclosures of Matsumoto, Askeland, and Kavesh.

At paragraph [0028], Matsumoto discloses that carbon filler may be added to the resin of the belt member 21; at paragraph [0034], Matsumoto discloses that carbon filler may also be added to resin of the reinforcing material 23. On page 4 of the Office Action, the Examiner asserts that Matsumoto discloses that “both resins are substantially identical resins by virtue of comprising principal components of identical resins (both resins can have carbon).” This is contrary to the classification of a resin as the term is used by one of ordinary skill in the art.

The two tables of contents submitted with the response dated February 13, 2009, and attached hereto in the Evidence Appendix, are illustrative of the manner in which resins are classified in the art. A person having ordinary skill in the art classifies resins according to their basic chain structure and their functional group, and not according to an additive which may or may not be present in the resin. Matsumoto is silent as to a relation between the resin in the belt member 21 and the resin in the reinforcing material 23. Therefore, Matsumoto does not disclose substantially identical *resins* for the belt member 21 and the reinforcing material 23.

The Askeland and Kavesh references do not disclose a belt comprising a tape of synthetic resin and stretched fibrous members of thermoplastic resin, wherein the thermoplastic resin and the synthetic resin comprise substantially identical resins, nor were they relied on as disclosing such in the Action. Accordingly, the limitation that the thermoplastic resin of the stretched fibrous members and the synthetic resin of the tape comprise substantially identical resins is not obvious in view of the combined disclosures of Matsumoto, Askeland, and Kavesh.

Claim 17 also recites that the stretched fibrous members of thermoplastic resin include oriented molecular chains of the thermoplastic resin oriented longitudinally along the stretched fibrous member. On page 4 of the Office Action, the Examiner asserts that Askeland discloses molecular chains of thermoplastic resin oriented longitudinally along the stretched fibrous

member. This is respectfully traversed for the reasons below.

Askeland discloses that, in a fiber-reinforced composite, if the added fibers are oriented along an axis of an applied tensile load the tensile strength of the fiber-reinforced composite is larger than if the fibers are oriented randomly or oriented in directions other than along the axis of the applied tensile load. However, claim 17 recites oriented molecular chains of *the thermoplastic resin* oriented longitudinally along the stretched fibrous member; not fibers (molecular chains of carbon) of an additive to the resin. Askeland is silent as to the orientation of the molecular chains in the resin matrix of the composite. Therefore, the limitation of molecular chains of thermoplastic resin oriented longitudinally along the stretched fibrous member is not disclosed by Askeland.

Kavesh has been cited as disclosing stretching a yet-unstretched fibrous member. Kavesh discloses that stretching of a (polyethylene gel) fiber will provide the fiber with an improved strength, but does not suggest at all that such a fiber reinforced through stretching is effective as a reinforcing material of a tape comprising a matrix of a substantially identical resin. Hitherto, in order to reinforce a tape of a particular material, stretched fibers of a considerably different material have been used. The reinforcing technique adopted in the present invention is unique in that a resin material (i.e., a tape) is reinforced by a substantially identical resin material of a different physical state (i.e., a stretched fiber). Such a unique concept of reinforcement as recited in claim 17 is not disclosed or rendered obvious by any combination of the disclosures of Matsumoto, Askeland, and Kavesh.

For the above reasons, the combined disclosures of Matsumoto, Askeland, and Kavesh do not render obvious the present invention as recited in claim 17. It is submitted that claim 17 is allowable over the prior art of record, as are claims 18-26, 34-43, and 49-51 depending therefrom.

Claims 34-43, 50, and 51

In addition to the reasons set forth above regarding the limitations of claim 17, claim 34

sets forth a belt according to claim 17 wherein the thermoplastic resin and the synthetic resin comprise identical resins or include identical resins as principal components.

As discussed above, the combined disclosures of Matsumoto, Askeland, and Kavesh do not render obvious the present invention as recited in claim 17 (wherein the thermoplastic resin and the synthetic resin comprise substantially identical resins). Thus, the limitation that the thermoplastic resin and the synthetic resin comprise *identical resins or include identical resins as principal components* is also not rendered obvious by the combined disclosures of Matsumoto, Askeland, and Kavesh for the reasons given above.

Accordingly, it is submitted that claim 34 is allowable over the prior art of record for this additional reason as well as the reasons given above, as are claims 35-44, 46-48, 50, and 51 depending from claim 34.

Claim 51

In addition to the reasons set forth above regarding the limitations of claim 34, claim 51 sets forth a belt according to claim 34 wherein each stretched fibrous member and the tape are made of an identical resin.

As discussed above, the combined disclosures of Matsumoto, Askeland, and Kavesh do not render obvious the present invention as recited in claim 34 (wherein the thermoplastic resin and the synthetic resin comprise identical resins or include identical resins as principal components). Thus, the limitation that each stretched fibrous member and the tape are made of an *identical* resin is also not rendered obvious by the combined disclosures of Matsumoto, Askeland, and Kavesh for the reasons given above.

The specification of the present application compares, for example, at page 24, lines 12-22 with reference to Table 1 on page 27, and at page 33, line 25 to page 34, line 3 with reference to Table 2 on page 36, the use of identical and differing resins for the stretched fibrous members and the tape. The cited examples show cases wherein both the stretched fibrous members and the tape are of polyvinylidene fluoride (PVDF), and contrast these with cases wherein the

stretched fibrous members are of 6/66 copolymer nylon and the tape is of PVDF. The use of identical resins for the stretched fibrous members and the tape, as taught in the present application, provides better physical properties in the resulting belt, which is attributable to a difference in adhesion between the resins.

The Examiner's assertion that "both resins are substantially identical resins by virtue of comprising principal components of identical resins (both resins can have carbon)," discussed above, is applied in the Office Action of November 18, 2008 in the rejection of claim 51. Such a classification scheme would imply that 6/66 copolymer nylon and PVDF are identical resins because both resins can have carbon, whereas a person having ordinary skill in the art of resins would clearly classify these as different resins due to their differing functional groups, i.e., amide group or fluorine.

Thus, the limitation that each stretched fibrous member and the tape are made of an identical resin is not disclosed or rendered obvious by the combined disclosures of Matsumoto, Askeland, and Kavesh. Accordingly, it is submitted that claim 51 is allowable over the prior art of record for these additional reasons, as well the reasons given above regarding claims 17 and 34.

III. Rejection under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of Kanai.

Claims 44 and 48

The shortcomings of Matsumoto, Askeland, and Kavesh discussed above are not obviated by Kanai, nor was Kanai indicated as disclosing these limitations in the Action. Accordingly, the combined disclosures of Matsumoto, Askeland, Kavesh, and Kanai do not render obvious the present invention as recited in claims 44 and 48. It is submitted that claims 44 and 48 are allowable over the prior art of record.

IV. Rejection under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of Kojima.

Claim 46

The shortcomings of Matsumoto, Askeland, and Kavesh discussed above are not obviated by Kojima, nor was Kojima indicated as disclosing these limitations in the Action. Accordingly, the combined disclosures of Matsumoto, Askeland, Kavesh, and Kojima do not render obvious the present invention as recited in claim 46. It is submitted that claim 46 is allowable over the prior art of record.

V. Rejection under 35 USC § 103(a) over Matsumoto in view of Askeland and Kavesh, and further in view of Kitamura.

Claim 47

The shortcomings of Matsumoto, Askeland, and Kavesh discussed above are not obviated by Kitamura, nor was Kitamura indicated as disclosing these limitations in the Action. Accordingly, the combined disclosures of Matsumoto, Askeland, Kavesh, and Kitamura do not render obvious the present invention as recited in claim 47. It is submitted that claim 47 is allowable over the prior art of record.

VI. Conclusion

For the reasons set forth above, it is submitted that the present invention as recited in independent claim 17 is not suggested by the combined disclosures of Matsumoto, Askeland, and Kavesh. Further, none of Kanai, Kojima, and Kitamura obviate the deficiencies of Matsumoto, Askeland, and Kavesh. Accordingly, a person having ordinary skill in the art would clearly not have modified the disclosure of the Matsumoto reference in such a manner so as to result in or otherwise render obvious the present invention of independent claim 17.

Accordingly, it is submitted that claim 17 is allowable over the prior art of record, as are claims 18-26, 34-44, and 46-51 depending therefrom.

Respectfully submitted,

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/Aldo A. D'Ottavio/

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CLAIMS APPENDIX

17 A belt comprising:

a tape-shaped product including

(i) a tape of synthetic resin having longitudinal edges, and

(ii) extending along each of said longitudinal edges and integral with said tape, a stretched fibrous member of thermoplastic resin including oriented molecular chains of said thermoplastic resin oriented longitudinally along said stretched fibrous member, said stretched fibrous member obtained by stretching a yet-unstretched fibrous member to provide said stretched fibrous member with a tensile strength greater than a tensile strength of the yet-unstretched fibrous member,

wherein said thermoplastic resin and said synthetic resin comprise substantially identical resins, and

wherein each said stretched fibrous member is positioned inwardly of a corresponding said each of said longitudinal edges.

18 The belt according to claim 17, wherein ball-insetting holes are in said tape between said longitudinal edges.

19 The belt according to claim 18, wherein said ball-insetting holes are disposed at equal intervals in a straight line.

- 20** The belt according to claim 19, wherein projections are disposed around said ball-insetting holes.
- 21** The belt according to claim 20, wherein each said stretched fibrous member is in a form of a monofilament.
- 22** The belt according to claim 18, wherein projections are disposed around said ball-insetting holes.
- 23** The belt according to claim 19, wherein each said stretched fibrous member is in a form of a monofilament.
- 24** The belt according to claim 19, wherein the belt has a tensile strength of at least 100 Mpa, and a thermal shrinkability of at most 1%.
- 25** The belt according to claim 18, wherein each said stretched fibrous member is in a form of a monofilament.
- 26** The belt according to claim 18, wherein the belt has a tensile strength of at least 100 Mpa, and a thermal shrinkability of at most 1%.

34 The belt according to claim 17, wherein said thermoplastic resin and said synthetic resin comprise identical resins or include identical resins as principal components.

35 The belt according to claim 34, wherein ball insetting holes are in said tape between said longitudinal edges.

36 The belt according to claim 35, wherein said ball insetting holes are disposed at equal intervals in a straight line.

37 The belt according to claim 36, wherein projections are disposed around said ball-insetting holes.

38 The belt according to claim 37, wherein each said stretched fibrous member is in a form of a monofilament.

39 The belt according to claim 35, wherein projections are disposed around said ball-insetting holes.

40 The belt according to claim 36, wherein each said stretched fibrous member is in a form

of a monofilament.

41 The belt according to claim 36, wherein the belt has a tensile strength of at least 100 Mpa, and a thermal shrinkability of at most 1%.

42 The belt according to claim 35, wherein each said stretched fibrous member is in a form of a monofilament.

43 The belt according to claim 35, wherein the belt has a tensile strength of at least 100 Mpa, and a thermal shrinkability of at most 1%.

44 The belt according to claim 34, wherein said thermoplastic resin forming each said stretched fibrous member comprises polyester elastomer, and said synthetic resin forming said tape comprises polyester elastomer.

46 The belt according to claim 34, wherein said thermoplastic resin forming each said stretched fibrous member comprises 6/66 copolymer nylon, and said synthetic resin forming said tape comprises 6/66 copolymer nylon.

47 The belt according to claim 34, wherein said thermoplastic resin forming each said stretched fibrous member comprises polyvinylidene fluoride, and said synthetic resin forming said tape comprises polyvinylidene fluoride.

48 The belt according to claim 34, wherein said thermoplastic resin forming each said stretched fibrous member comprises polyester, and said synthetic resin forming said tape comprises polyester elastomer.

49 The belt according to claim 17, wherein each said stretched fibrous member is in a form of a monofilament of said thermoplastic resin.

50 The belt according to claim 34, wherein each said stretched fibrous member is in a form of a monofilament of said thermoplastic resin.

51 The belt according to claim 34, wherein each said stretched fibrous member and said tape are made of an identical resin.

EVIDENCE APPENDIX

Enclosure (1) Brydson, J. A., *Plastics Materials*, 5th ed. London: Butterworths, London, 1989, Table of Contents.

Enclosure (2) Bandrup, J. and E. H. Immergut, eds., *Polymer Handbook*, 3rd ed. New York: John Wiley & Sons, Inc., 1989, Table of Contents.

RELATED PROCEEDINGS APPENDIX

None.